VA NATIONAL CENTER ON HOMELESSNESS AMONG VETERANS
Promoting data-driven, evidence-based solutions to end Veteran homelessness

RESEARCH BRIEF

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Early Cognitive Decline and Dementia in Homeless Veterans

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Introduction

In recent decades there has been rising concern with the prevalence and impact of dementia on our older population. As the size of the U.S. population age 65 and older continues to increase, the number of Americans with dementia will grow. This number will escalate rapidly in coming years, as the population of Americans age 65 and older is projected to grow from 53 million in 2018 to 88 million by 2050.

The Veteran population is also aging, and the proportion of older Veterans in the homeless population is especially high. A high prevalence of dementia in the homeless Veteran population would therefore be expected. While there are no data to support this expectation, an increasing number of alarms are being raised in housing programs about symptoms of significant cognitive loss in Veterans in their 50s who are experiencing homelessness, substantially below the usual age of risk for dementia. This brief provides an overview of aging and its impact on cognitive decline and risk for dementia. It also discusses evidence for cognitive impairment and functional decline in homeless populations and Veterans experiencing homelessness.

AGING AND COGNITIVE DECLINE

Researchers have identified several important types of mental abilities that are usually referred to as cognitive domains: attention, language, executive function, problem-solving, speed of processing, and, especially, memory. Healthy individuals will likely experience minor loss of ability in one or more of these cognitive domains as they reach their 60s or even small losses as early as the mid-50s. In each domain, some elements of ability are retained with aging, while others may show a decline:

- Simple, focused attention such as the ability to attend to a conversation or movie tends to be preserved in older age. Changes might be noticed, however, when attention is being divided between two tasks, such as watching TV and talking on the phone at the same time.
- Almost all verbal abilities are preserved as we age. The most common difficulties are recalling the names of objects and places when having a conversation and remembering people's names.
- Executive function abilities allow us to plan, organize, and complete acts in the correct sequence to reach a goal (e.g., in following a new multiple-step recipe to cook an unfamiliar or new dish. With age, more concentration may be needed to check and complete each step of the plan.
- Older individuals usually have little difficulty in using traditional, or well-used ways of approaching solutions. Unfamiliar problems may take extra time to figure out.

- Memory for past events stored over many years remains relatively preserved in old age. Learning and storing new information, however, is more vulnerable to aging. Changes in memory are commonly reported by individuals as they progress through their 60s and 70s.

- Aging does affect the speed with which cognitive activities are performed. This does not mean that the activities cannot be performed, but rather that they may take longer.

Across individuals, the degree of decline, and the pattern of decline across cognitive abilities, vary substantially. Cognitive change is a normal part of the aging process. The most important fact about normal cognitive decline is that it does not have a significant impact on everyday functioning. Activities of daily living (ADLs), such as being able to feed and dress oneself, bathe, and communicate with others, are not affected. Impact on instrumental ADLs (IADLs), such as preparing meals, managing money, are minimal.

DEMENTIA AND ALZHEIMER'S DISEASE

The term dementia describes an irreversible condition characterized primarily by progressive loss of cognitive abilities, such as memory and language, to the degree that everyday functioning (ADLs and IADLs) is eventually impaired. Several diseases produce dementia; the most common cause is Alzheimer's disease, which accounts for the majority (70+%) of cases. Other causes include vascular, Lewy body, and frontotemporal dementias. Most cases of dementia have onset no earlier than age 65. Alzheimer's disease is the most thoroughly studied form of dementia. Age is unquestionably the greatest risk factor for Alzheimer's disease. The percentage of people with Alzheimer's disease increases from three percent of people age 65 to 74 to 32% of people age 85 or older. Although age is the major risk factor, it is critical to understand that Alzheimer's disease is not a normal part of aging, and older age alone is not sufficient to produce Alzheimer's disease. Family history is a risk factor, but it is not a good predictor of risk--about as many people without a family history develop Alzheimer's disease as those with a family history. Genetic risk factors for Alzheimer's disease are complicated. For almost all cases, the genetic risk is highly complex and involves multiple genes. While some of these genes have been identified, they are not "deterministic"—carrying one may indicate increased risk but does not determine that someone will develop Alzheimer's disease.

In addition to the fixed risks of age, family, history, and genetics, there are a number of "modifiable" risk factors for Alzheimer's disease. These are conditions or behaviors that can be changed to reduce risk. Several modifiable risk factors for Alzheimer's disease are the same modifiable risk factors for cardiovascular diseases, including heart disease and stroke: high cholesterol levels, high blood pressure, diabetes, smoking, obesity, and sedentary lifestyle. For individuals who are compliant with medications, high cholestorol, hyptertension, and diabetes can be controlled. However, increased risk due to smoking, obesity, and sedentary lifestyle requires changes in lifelong behaviors. There is also evidence to show that severe or repeated head injuries increase the risk for developing dementia. Notably, the risk factors for dementia act not only to increase the lifetime probability of developing dementia, but also accelerate the onset for those who do develop dementia.

ALZHEIMER'S DISEASE: SIGNS, SYMPTOMS, STAGES OF PROGRESSION

Some degree of cognitive decline occurs, beginning as early as age 50, in many individuals. "Normal" cognitive decline is usually characterized by common complaints that do not interfere with ADLs or IADLs ("I came into this room to get something and I forget what it is," "I can't find my car keys," "I ran

into a person at Home Depot who is a church member but I couldn't remember her name."). However, significant memory loss is not a characteristic of normal aging.

There is no one distinctive symptom or sign that someone has developed Alzheimer's disease. In fact, Alzheimer's disease progresses slowly over a long time period, making it difficult in the earliest stages to make a confident judgment. There are signs and symptoms, however, that family and friends can review to determine whether followup with a doctor or clinic should be taken:

- Memory loss that disrupts daily life: forgetting recently learned information (a nephew getting engaged), important dates or events, asking for the same information over and over.
- Problems in planning and execution: difficulty in following a plan or working with numbers, confusion in following a familiar recipe or keeping track of monthly bills, taking much longer to do routine tasks, confusion in following the rules of a familiar game.
- Repeatedly losing track of dates, seasons, and the passage of time.
- Problems in conversation: stopping in the middle of a conversation, repeating the same information, word-finding problems or misnaming (e.g., calling a wrench a "turn tool").
- Losing/misplacing things: putting things in unusual places (e.g., wallet in bathroom cabinet), not being able to retrace steps to find a lost object, accusing others of stealing.
- Poor judgment: giving large amounts of money to telemarketers, ignoring hygiene.
- Withdrawal: decreased participation in social activities or sports, trouble keeping up with a favorite sports team, stopping a hobby or interest without a good reason.
- Changes in mood/personality: episodes of confusion, suspiciousness, depression, fearfulness; easily upset at home, work, with friends or in places when out of comfort zone.

The symptoms of Alzheimer's disease progressively worsen over time, although the rate of progression varies across individuals. Life expectancy for persons with Alzheimer's disease usually varies between three to 10 years. Alzheimer's disease typically progresses slowly. In the earliest stage, symptoms such as memory lapses and word-finding problems may be observable, but the person may still function fairly independently, being able to drive, work, and be part of social activities. Over time, cognitive loss and functional decline progress to the point where word confusion, frustration and anger, unpredictable behavior, difficulty in expressing thoughts, disorientation, and loss of ability to perform routine tasks are common problems. In the end stages, ability to engage in conversation, execute ADLs, respond to the environment, and, eventually, to control movement become increasingly impaired. Substantial changes in behavior and personality may occur. At this point, 24-hour care is required.

There is no single test or diagnostic method that definitely establishes whether a person has Alzheimer's disease—diagnosis involves a complete assessment that considers all possible causes. A thorough diagnostic evaluation may involve: medical history, review of medications, physical exam, laboratory tests to rule out alternative causes (such as anemia or vitamin deficiencies), neurological examination, MRI or CAT scan (to rule out brain tumors or evidence of strokes), and a neuropsychological evaluation that determines the amount and type of cognitive loss. Because of the different types of expertise that may be required, teams of specialists work together in memory disorders clinics that are located in

major cities and universities. These can be found through an internet search for "memory disorder clinics."

EARLY COGNITIVE CHANGES IN HOMELESS POPULATIONS

VA homeless researchers and clinical managers from VA homeless programs are reporting increasing observations of significant cognitive and functional impairment in Veterans as young as their 50s. These reports raise the question of whether some of these cases reflect an especially early onset of dementia. There are no studies that have examined the prevalance of dementia in homeless populations. However, there are studies that provide some support for the concerns raised in the clinical reports.

A small number of studies[1-5] have examined the cognitive status of homeless individuals, using formal cognitive or neuropsychological tests to examine different domains of cognition. For the most part these studies have looked at homeless groups who were much younger than the age of risk for Alzheimer's disease and other dementias. In addition, some of the participants in these studies had severe mental illness, serious drug abuse problems, or limited education. Results have varied widely because of the heterogeneity of the characteristics of the study subjects, but rates of cognitive impairment were substantial, ranging from 25 to 75 percent. In one recent study[4] of 350 older homeless individuals, 25 to 35 percent of participants met criteria for cognitive impairment. Cognitive impairment was found to be highly associated with severe alcohol abuse. A single study[3] has reported that 30 to 40 percent of homeless participants reported a problem with at least one IADL or ADL activity. In total, these studies suggest that loss of cognitive function, and perhaps daily function, may be associated with homeless status. However, none of these studies involved thorough diagnostic evaluations for dementia or examined cognitive function over time to determine if loss of cognitive ability or daily function was progressive. Although these studies do document cognitive impairment in homeless individuals at ages substantially younger than the typical onset of dementia, the failure to conduct more definitive evaluations and to rule out alternative causes limits the value of the data.

More informative is homelessness research that has examined geriatric conditions such as functional impairment, falls, and urinary incontinence. One recent study[3] examined a sample of 350 homeless persons over the age of 50 with high rates of mental health problems and lifetime alcohol and/or drug abuse. Over a third of study individuals (38.9%) reported difficulty performing one or more ADLs and half reported difficulty performing one or more IADLs. Half of the sample reported episodes of urinary incontinence and over a third had experienced one or more falls in the past six months. Although the median age of the study participants was under 60, these rates of geriatric conditions were equal to or higher than those of adults in the general population with a median age of nearly 80 years. Other recent research[2] with a similar homeless sample has shown that the presence and number of geriatric condition problems are especially associated with diabetes mellitus, hypertension, arthritis, alcohol use problems, and drug use problems.

In summary, limited research indicates that homeless individuals are at risk to show cognitive impairments and functional problems in their 50s. These cognitive and functional changes are representative of the types of symptoms seen in dementias. This research suggests that homeless individuals may be vulnerable to early development of dementia, perhaps even including Alzheimer's disease, which normally has onset beginning at age 65. This research also suggests that the prevalence of dementia in homeless populations age 65 and older would be much higher than that of the general population.

HOMELESS VETERANS AND RISK FOR DEMENTIA

While there are no reported studies of cognitive impairment and geriatric condition problems in the homeless Veteran population, there is sufficient evidence of associated risk factors to suggest that Veterans may be at increased risk for these conditions. In light of evidence that homeless persons aged 50 and above experience cognitive and geriatric impairments at rates that are on par with persons in the general population who are 20 years older, it is informative to examine age characteristics of the homeless Veteran population. Older Veterans comprise an increasing share of homeless Veterans[6]: in 2009, those aged 51 and above comprised about 50% of all Veterans who used emergency shelter over the course of a year, and Veterans aged 62 and above comprised about 10% of this total. However, by 2015 Veterans over the age of 50 comprised nearly three out of every five Veterans using emergency shelters, and those aged 62 and above alone accounted for about 15% of the total.

Medical and health conditions associated with cognitive impairment and geriatric problems in homeless individuals are common in homeless Veterans. Numerous studies[7,8] have documented that homeless Veterans have high rates of health disorders, psychiatric conditions, and drug/alcohol abuse. Sixty percent have a history of psychiatric disorder and four out of five have struggled with alcohol and/or drug abuse. Two-thirds have a chronic medical condition such as diabetes or hyptertension, and a third have two or more chronic medical conditions. Access to medical treatment for risk disorders for dementia (hypertension, diabetes, high cholesterol) and compliance with medications are both notable problems for homeless Veterans. Not surprisingly, lifestyle risk factors for dementia, such as smoking and poor nutrition, are characteristic of Veterans experiencing homelessness.

Recent research on mortality in homeless Veterans may also enlighten hypotheses about risk for dementia. Studies of older (age 55+)[9] and younger[10] (age 30-45) Veterans show that those with a history of homelessness have significantly reduced lifespans in comparison to Veterans without such a history. Notably, the large majority of these homeless Veterans die from the same diseases as Veterans without any history of homelessness. These results suggest that homeless Veterans are especially vulnerable to the fatal effects of these diseases. It has been hypothesized that this susceptibility is due to “accelerated biological aging” – aging in all physiologic systems—produced by a variety of stressors, including poor nutrition, depleted immune systems, poor dental hygiene, psychiatric disorders, and alcohol/substance abuse.

In summary, while there is no research evidence to document cognitive impairment, geriatric conditions, or dementia in Veterans under the age of 60, a significant number of studies have provided a profile of characteristics of homeless Veterans that strongly suggests that they may be at risk for early expression of dementia. Notably, homeless Veterans typically carry a number of risk factors that are known to lower the age of onset of dementia. This risk profile may be particularly enhanced by the potential for accelerated biological aging, a primary hypothesized factor for early mortality in homeless Veterans. In view of these possibilities, the VA has initiated training throughout its housing programs to assist program staff to identify symptoms of dementia, screen Veterans for target indicators, and initiate comprehensive medical evaluations when warranted.

Summary

As the size of the U.S. population age 65 and older continues to increase, the number of Americans with dementia will grow. Dementia is an irreversible condition characterized primarily by loss of cognitive abilities, such as memory and language, to the degree that everyday functioning is impaired. Several

diseases can produce dementia; the most common cause is Alzheimer's disease, which accounts for the large majority (70+%) of cases in the U.S. The age of onset for most dementias begins at 65; earlier onset is infrequent. However, in homeless populations, cognitive impairment and functional decline have been found to have a notable prevalence in individuals as early as ages in the 50s. No research to date has determined whether these cases might represent, in part, early onset of dementia or whether they reflect the direct cumulative impact of factors such as alcohol abuse, head injury, and chronic health conditions. This determination is difficult, as many of the conditions found in the homeless population are also risk factors for dementia, such as hypertension, diabetes, poor nutrition, and smoking. The homeless Veteran population is aging and is also characterized by numerous modifiable risk factors for dementia. However, in the Veteran homeless population these factors remain potent because of barriers to health care access or poor compliance. This risk profile may be heightened by the potential for accelerated biological aging, a primary hypothesized factor for early mortality in homeless Veterans. In view of these possibilities, the VA has initiated training throughout its housing programs to assist program staff to identify symptoms of dementia, screen Veterans for target indicators, and initiate comprehensive medical evaluations when warranted.

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